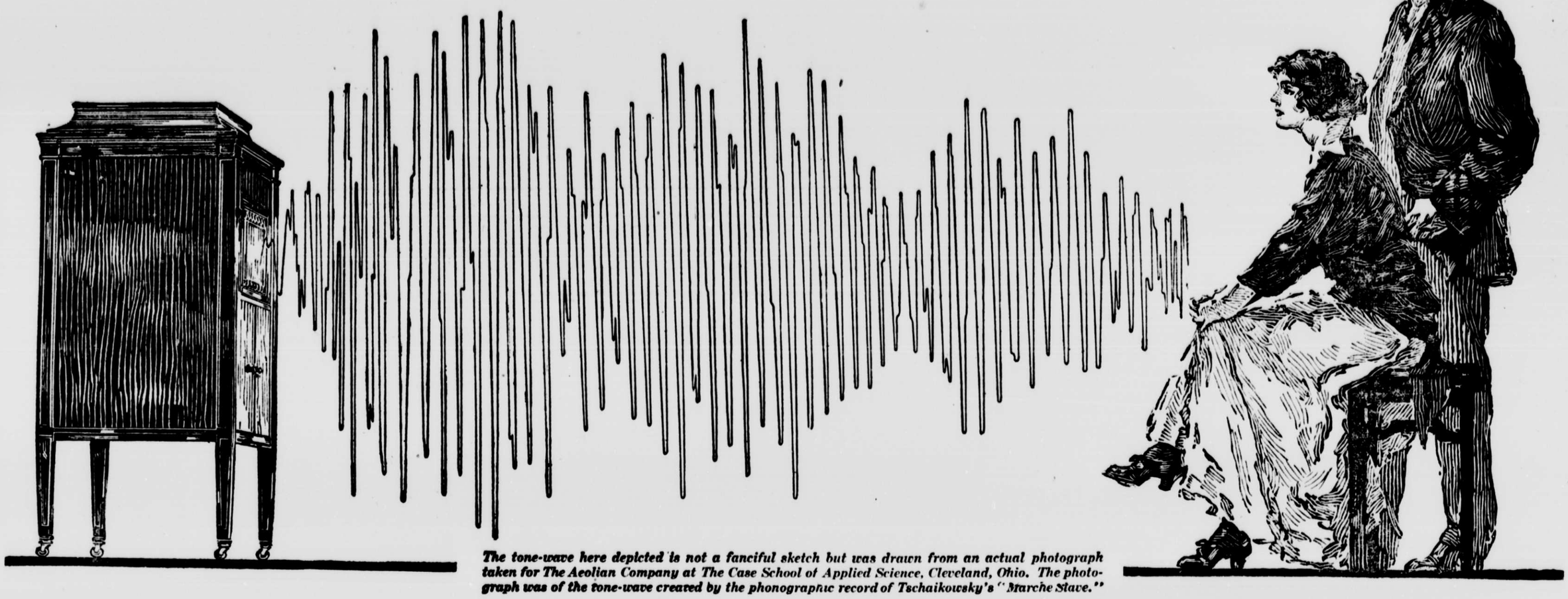


The tone-wave here depicted is not a fanciful sketch but was drawn from an actual photograph taken for The Aeolian Company at The Case School of Applied Science, Cleveland, Ohio. The photograph was of the tone-wave created by the phonographic record of Tschaikowsky's "Marche Slave."

The Miracle of Sound

The time duration of the portion of the wave shown was 13/100 of a second and the instruments playing at the moment included violins, violas, violincellos, double-basses, flutes, clarinets, oboes, French horns, trumpets and trombones, with trumpets predominating. Here we see the physical means by which musical tones are carried through the air. Some sounding agent—a violin, a piano, a flute or phonograph—is set in vibration. This vibration produces **sound,** *or* **tone-waves** *which travel at a velocity of about 1100 feet per second.*

If the tone of the instrument is pure and simple like the flute, the waves it creates are almost smooth and symmetrical. If complex like the orchestral tone shown above, the waves are exceedingly irregular and complicated. In any case, every different musical tone, whether simple or complex, produces its own peculiar and distinctive wave. And the wonderful thing is that when many instruments play at once, all their distinctive waves, merge into **one wave,** *which enables us to hear all the different instruments and even to* **distinguish them apart.**

There are few more interesting studies than that of the Science of Sound. While the general principles of this Science are taught in all text-books on Physics, there have been but few investigators who have achieved distinction in this Science, and probably not more than one or two who have specialized on **musical tones.** *Moreover, it is a notable and significant fact that The Aeolian Company is the only business house that has carried on extensive research in this Science and applied its principles to the* **manufacture of musical instruments.** *The distinguished recognition accorded this Company's instruments both here and abroad, is largely dependent upon this fact. And it is due to The Aeolian Company's unparalleled equipment and experience that its latest production, The Aeolian-Vocalion, marks a new epoch in the field of the phonograph.*

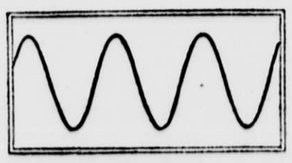
The Aeolian-Vocalion

"A New Phonograph of Extraordinary Tone"

THE phonograph is unquestionably the most wonderful musical instrument that has ever been made.

A mechanism by means of which an inarticulate record can be translated into *living sound*; which can create from silence, as it were, the melodious tones of musical instruments, and the actual voices of human beings, is nothing short of miraculous. To the genius who invented the phonograph and those responsible for its present development should be accorded all praise.

But like every other great invention, the phonograph is subject to improvement and further development And as it is practically a musical instrument, this improvement is first and foremost in the matter of its *tone.*



Tuning Fork

Illustration drawn from photograph of the tone-waves created by a scientifically mounted tuning fork. The absence of irregularities in these waves, or their symmetry, is due to the utter lack of partial tones in the tone of a properly mounted tuning-fork.

The Aeolian-Vocalion represents the development of the phonograph. It possesses several revolutionary features which make it virtually a *new* instrument. Among these, is a wonderfully effective method of artistic *tone-control.* Its most notable feature, however, is its extraordinary tone.

Strictly speaking, no phonograph has any tone of its own. One moment its tone is that of the violin, the next of the flute, or the clarinet, or the voice of the famous lyric soprano or operatic tenor.

To just the degree that the phonograph is able to reproduce the actual quality, or timbre, of these different tones without imparting any foreign quality of stridency or extraneous noises, does it approach perfection.

The Aeolian-Vocalion, in the matter of tone, is very nearly a perfect phonograph. When a violin record is played upon this wonderful instrument, one hears, not simply music but a *real violin playing.*

Flute

Illustration drawn from photograph of the tone-waves created by the note of a flute. The slight irregularities in these waves are caused by the partials in the tone of the flute. There are very few of these, hence the flute is a comparatively "colorless" instrument.

This is not only true of the violin, but is the case with every instrument and vocal record. The musical tones produced are not only beautiful, they are *characteristic.* The tones of the flute have the pallid purity that distinguishes this instrument; those of the clarinet are plaintive and mellow; of the trumpet, full, pealing and military; of the trombone, grave and majestic. Human voices sound real and life-like, with never a question as to whether they are soprano, tenor or baritone, or as to whom they belong.

Moreover when an orchestra record is played there is a wholly new sense of fulness and richness, due to the lower fundamental orchestral tones being, for the first time in phonographic reproduction, given their proper emphasis.

Those who listen to The Aeolian-Vocalion and hear these wonderful things, almost invariably ask in amazement the secret of its extraordinary tone.

The answer may be given in a word—it is due solely to the fact that The Aeolian-Vocalion is the most *scientific phonograph* that has yet been produced.

And in the last analysis it is strictly a matter of science. The phonograph that is able to deliver from its horn, the most scientifically exact counterpart of the tone-waves created by people singing or playing, is the *best phonograph.*

Violin

Illustration drawn from photograph of the tone-waves created by a note of the violin. The distinctive quality and character of the tone of every instrument is dependent on the number and character of its partial tones which are all represented in the peculiar irregularities in the tone-waves it forms.

No concern in the music industry is so well equipped both by experience and means at its command, to build such a phonograph, as The Aeolian Company.

This great Company has for years been scientifically developing musical instruments. It maintains elaborate departments of research both here and abroad. In its employ are the most able musical and mechanical experts in the music field. In addition, it has access to probably the most famous laboratory in the world for acoustical research, and the co-operation of one of the greatest scientific investigators and authorities on musical tone.

The Aeolian-Vocalion is more than simply a new Aeolian instrument for commercial exploitation. Its production actually marks an *epoch* in the development of the phonograph, and as such is a matter of general public interest.

The Aeolian Company recognizes this and in consequence extends a cordial invitation to all to hear this new instrument, without regard to any question of purchase. Demonstrations will be given at all hours during the day to those who visit Aeolian Hall for the purpose.

Human Voice

Illustration drawn from photograph of the tone waves created by the human voice, saying "ah." There were 10 partials observable in this tone, consisting of a fundamental and 9 overtones. The voice is particularly rich in partials some having in their lower registers, 25 and more.

Those who are considering the purchase of a phonograph, however, will do well indeed to see The Aeolian-Vocalion before making any selection.

For the information of such, it may be said that this instrument may be obtained in any one of a variety of beautiful models costing from $90 upwards.

Easy monthly terms of payment may be arranged and allowances will be made on other phonographs in exchange.

THE AEOLIAN COMPANY, Aeolian Hall, 29-33 W. 42nd Street

"LARGEST MANUFACTURERS OF MUSICAL INSTRUMENTS IN THE WORLD"